

laid on wet cloth are beginning to give distinct evidence of the production of cups. The probability at present is that *S. varium* is the *Sclerotium* of a *Peziza*, nearly allied to *Peziza tuberosa*.

A. STEPHEN WILSON

North Kinmundy, Aberdeen, July 30

P.S.—Since the above was written I have discovered amongst growing potatoes great numbers of *S. varium* with the completed fungus attached to them. It is a yellowish-brown *Peziza* of various diameters up to half an inch. I send you a box of specimens.—A. S. W.

#### "Zoology at the Fisheries Exhibition"

IN NATURE, vol. xxviii, p. 289, is an article upon the zoology of the Fisheries Exhibition, in which the writer states that some of the corals exhibited by Lady Brassey belong to me and are not that lady's property. Will you permit me to emphatically assert that not a single coral in the case belongs or ever did belong to myself, and that every specimen was procured by Lady Brassey during her voyages in the *Sunbeam*.

What is meant by the words "gratuitous inventions" I cannot understand; the new species were carefully compared with those in the British Museum, also with those obtained during the *Challenger* expedition, and with the works of Lamarck, Dana, Milne-Edwards, Moseley, and others.

It is possible that the commissionaire in charge may have, in dusting the collection, shifted some of the labels, but the fact remains that Lady Brassey's collection of corals is the only one in the Exhibition which gives any information either upon the nomenclature or habitat of the specimens exhibited.

204, Regent Street, W., August 4 BRYCE-WRIGHT

#### "The Student's Mechanics"

I HAVE no wish to quarrel with the review you have printed of my book, "The Student's Mechanics;" and I have to thank the reviewer for drawing attention to one omission, namely, the failure to explain fully the second law of motion, as related to the two methods of measuring force. But I should be glad to be allowed a few words to explain my treatment of Accelerating and Moving force. One of my objects was to clear away, by full explanation, the confusion which no doubt sometimes exists as to those terms; and this I could not have done if I had omitted them altogether. It will be long before a reader of works on mechanics can safely remain ignorant of their meaning; and indeed the discussions of force as causing change of velocity simply (as in kinematics), and as causing change of momentum, are still kept so much apart that terms to indicate the distinction do not seem out of place. Nor do I see any confusion likely to arise between "acceleration" and "accelerating force": the one is the actual change of velocity in a given time, the other is the force which causes that change. The latter is measured by the former, but it is not the same thing. In Art. 422 the word "accelerating" is simply used in opposition to "retarding," in the sense of that which increases velocity instead of diminishing it: I know no other word in use for the same purpose. Lastly, the proof in Art. 359 was given precisely to supply the omission to which your reviewer calls attention, and which does exist in the ordinary proofs that no velocity is lost in passing round a smooth curve. I there show that the sum of such losses, in a given time, is indefinitely small compared with the sum of another set of quantities, which sum is itself finite; hence the first sum may properly be neglected.

WALTER R. BROWNE

#### Sand

As explained in my note on p. 245, I had not the advantage of perusing Mr. Waller's paper on "Sand." Mr. Gardner, in his notice of it gave the first place to "distinguishing with certainty by the aid of the microscope sand that has been worn by the action of wind from sand that has been for long exposed to surf, and this again from sand brought down from torrents." I assumed this was its primary object. In this I am in error. Mr. Waller says his "paper was to show that chalk flints had scarcely any place in the formation of sand." Had I known this was the purpose of his writing I would not have troubled you with any remarks, as I entirely agree with Mr. Gardner when he says, as in p. 225: "The coast-line occupied by flint shingle is almost limited to portions of Western Europe, and is relatively insignificant."

I am glad to learn that Mr. Waller has a more comprehensive

object in view, and that a large series of sands from modern and ancient formations are being examined microscopically, and shall be glad to supply portions of specimens of the soils and subsoils of Australia and New Zealand which contain sand, and were examined under the microscope ten years ago, to compare their form and appearance with similarly situated soils from Europe.

JAMES MELVIN

#### Treble Primary Rainbow

ON Sunday, July 15, as a heavy thunderstorm was passing away from over this place, a brilliant rainbow appeared a little to the south of east about 5.45 p.m. There was a complete primary arch and a nearly perfect secondary one, and on being led to examine the former in consequence of its appearing unusually broad, it appeared to be made up of three bows, one directly below the other. The red of the spectrum being repeated three times was what drew my attention to this point. The two lower bows appeared smaller than the top primary arch. Thinking I must be suffering from some optical illusion, I got at the rainbow, and found that they all saw three distinct bows in the primary arch, in addition to the secondary arch. Is not this an unusual occurrence?

R.

Bexley, Kent, July 21

[This is merely the well-known phenomenon called *spurious bows*, which has not yet found its way into the "popular" class of text-books, though the principles of its explanation were long ago pointed out by Young. The full theory was given by Airy, and found to coincide with the very exact measurements of Hallowes Miller. When the raindrops are all of the same size, each wave-length in the rainbow has one principal maximum with an infinite number of subsidiary maxima of rapidly-decreasing brightness. These lie *inside* the chief maximum in the *primary* rainbow, and *outside* it in the *secondary*.—ED.]

#### FUEGIAN ETHNOLOGY

IN Guido Cora's *Cosmos* for May, 1883, Lieut. Bove, of the Italian Antarctic Expedition, supplies some interesting details on the little known inhabitants of Tierra del Fuego, amongst whom he spent some time in the spring of the present year. He speaks highly of the English missionaries stationed at Ushiwaya, in Beagle Channel, who have succeeded in introducing a few rudimentary notions of human culture amongst several tribes hitherto supposed to be quite irclaimable. As had long been suspected, the archipelago is found to be occupied not by one but by three distinct races, the Alacalufs in the west, the Onas in the east, and the Yagans in the south. Of these the Yagans, who stretch from the north side of Beagle Channel southwards to Cape Horn, appear to be the true aborigines. They have been driven to the southernmost and most inhospitable islands by the Onas and Alacalufs, both intruding from the mainland. The Onas, who are clearly of Tehuelche origin, penetrated from Patagonia across the eastern arm of Magellan Strait, into the large island of King Charles South Land (Eastern Tierra del Fuego), which they now hold almost exclusively. In the same way the Alacalufs, of Araucanian stock, made their way from the Chilian Andes, across the western arm of Magellan Strait, into the western islands, which they now occupy from Cape Pillar to Stewart Island, at the Pacific entrance of Beagle Channel. They number scarcely more than 2000 altogether, while the Yagans and Alacalufs are estimated by the English missionaries at about 3000 each, giving 8000 for the whole archipelago.

Although now representing the most aboriginal element, the Yagans themselves would appear to belong originally to the same Chilian family as the Alacalufs, the points of difference being easily explained by their longer isolation from the parent stock and by the more unfavourable climatic conditions of their present homes. From numerous measurements taken by Bove, they seem to be much below the middle height, although still nearly as tall as the Araucanians of the mainland. Of these the

average stature, according to D'Orbigny, is 5 feet 3 inches, while the Yagans range from 4 feet 10 inches to 5 feet 4 inches, and the women from 4 feet 9 inches to 5 feet. But in other respects they present a more debased appearance than their continental congeners, being distinguished by low brows, prominent zygomatic arches, large pendent lips, flat nose, round face, loose, wrinkly skin ("pelle grinzosa e cadente"), thin extremities, the legs curved outwards. The black hair is of the usual American texture, coarse, lank, and long, but in one district chestnut and wavy, due, no doubt, to mixture with white blood.<sup>1</sup>

They neither tattoo nor paint the body, which is exposed almost naked to the inclemency of an excessively rigorous and stormy climate. In this respect the Fuegians present a striking contrast to the Eskimo at the opposite extremity of the continent, the general cut of whose warm and comfortable attire may, according to Mr. E. B. Tylor, be due to the influence of the old Norse settlements in Greenland. Although Bove gives us two distinct terms, *accar* and *tuma-chi* for *house* and *hut* respectively, the dwellings themselves are all alike described as wretched hovels, made of branches stuck in the ground and loosely bound together in the Botocudo fashion. More skill and care is displayed in the construction of their beechwood canoes, which are generally from fifteen to twenty feet long and about two feet wide. In these frail craft they navigate the intricate channels of their storm-swept waters, and boldly pursue the whale and dolphin often far out on the high seas beyond sight of land ("spesso fuori dalla vista d'ogni terra"). Here, however, it may be well to remember that similar statements were constantly made of the Andaman islanders until Mr. Mann recently showed that in their light outriggers they never venture far from the shore.

Like the Araucanians the Yagans are polygamists, and, like the followers of the Prophet, they have generally four wives. But, while the Araucanians purchase their mates,<sup>2</sup> the Fuegian bride is provided with a dowry consisting usually of a canoe and a few harpoons. Nevertheless all the hard work, such as fishing, hutbuilding, the kindling and preservation of fire, falls to the share of the women, who in return meet with nothing but the most brutal treatment from their helpmates. "How often," writes Bove, "have I seen men seated cosily round a good fire, while the wretched women remained exposed to the snow, wind, water, fishing for their idle and unmannerly husbands!" Notwithstanding their hard lot the women are exceptionally fruitful; but, on the other hand, a small percentage only of the children resist the severity of the climate. They leave the paternal roof at a very early age, and begin to shift for themselves before reaching their teens. In fact family ties can scarcely be said to exist, and the only affection of which the Fuegian seems capable is "self love." "How often," again remarks the Italian explorer, "have I seen the father devouring a hunch of meat or bread, while round him stood wives and children, their eyes riveted on the food, with features distorted by hunger, rendered all the more painful at sight of others being sated, timidly gathering the scraps dropping from his lips, and falling rabidly on the remnants of the feast contemptuously thrown to them by the ferocious head of the household!"

Each family circle lives apart in absolute independence, combining only in small tribal groups for the purpose of

<sup>1</sup> With this description may be compared that of the fourteen Araucanians now encamped in the Jardin des Plantes, Paris, and figured in the *Illustration* of July 28, 1883. The low brow, high cheek-bone, flat nose, lank hair, and general flat features give to both races a common Mongoloid expression, such as is distinctly seen in the Guarani, Tupi, Botocudos, and so many other South American peoples. This expression seems in fact almost more pronounced in the southern than in the northern races of the New World, and it is certainly remarkable that the physical appearance of the Araucanians and Fuegians should be even more suggestive of an Asiatic origin than is that of the Eskimo and Athabascan groups.

<sup>2</sup> "L'Araucanien peut prendre autant de femmes qu'il en peut nourrir et payer aux parents, car les femmes s'achètent."—*L'Illustration*, July 28, 1883.

mutual defence against some common enemy. Thus it is that the first germs of the community are sown by the necessity of self-preservation, just as the fully organised society is still kept together by the same overruling principle. But in the Fuegian community the idea of headship has not yet been evolved. No one claims the right to assume the chieftaincy, or to meddle in the concerns of his neighbour. Hunting or warlike excursions are arranged by common consent, and the spoils of war or the chase are equally distributed amongst the members of the expedition. Certainly the Fuegian social system seems to favour the views of those, rather, who hold that everywhere the commonwealth preceded oligarchy and the monarchy. As the monotheistic conception was arrived at through pantheism and polytheism, so in the social order the autocrat appears as the final outcome of a rude communism and *πολυκοινωνία*.

The Yagans, however, seem to have scarcely reached the pantheistic, or perhaps it would be more correct to say the pananthropomorphic, state. Religious notions, in the strict sense, cannot be said to exist where no clear distinction has yet been drawn between the natural and supernatural. Even with superstitious ideas they are but little troubled ("sono pochissimo superstiziosi"), while their indifference to the remains of the dead would seem to imply that they have no anticipations of an after life. To the naturalists of the Italian expedition they freely parted with the crania of fathers, friends, and relations, without the least outward symptoms of regret. In one instance, however, a good deal of sentiment was expressed by a young Yagan, who thus somewhat poetically addressed the skull of his father: "Farewell, dear father. You, who when alive never saw aught but our snows and our storms, are now going dead far far away!" This is the language of one, in whom at least dim visions of another existence seem to be dawning.

Considering the extremely low state of their culture, it requires a considerable degree of credulity to accept the statement that their agglutinative language possesses some 30,000 words, besides highly complex and elevated grammatical forms ("ha circa 30,000 vocaboli, e forme grammaticali molto complesse e elevate"). This is naturally regarded as a sure proof that the Yagans have had a much higher origin than might appear from their present debased condition. But it will be safer to await further proof before accepting the statement at all. Reserve is the more needed that we are told somewhat mysteriously that this linguistic phenomenon was very little studied by the explorers ("femoneno notato, quantunque pochissimo studiato, dei nostri exploratori.") It is also curious that, with such a copious vocabulary, of which a few specimens are given, the same word *yash* should have to do duty both for *hand* and *finger*, as well as for *head*, this last, however, doubtless as a homophone, or else through one of those mistakes which cannot always be avoided even by careful students of barbarous languages. The numerals do not seem to get beyond *five* (cu-pash-pa, an obvious compound), which is again somewhat inconsistent with a vocabulary of 30,000 words! But we may soon expect further light to be thrown upon this point by the English missionaries, who are doing such excellent work among the Yagans of Beagle Channel, and whose labours will doubtless soon be extended to the whole of the Fuegian Archipelago.

A. H. KEANE

#### THE ISCHIAN EARTHQUAKE

THE report from the Central Observatory, by Prof. de Rossi of Rome, shows that signs of the coming catastrophe were not wanting at the different meteorological stations. What follows is, according to the *Daily News* correspondent, the most interesting part of Prof. de Rossi's report.

"Several days before the 25th and 28th July the micro-